



The development of managerial control in British firms, c.1880-c.1940

Trevor Boyns

► To cite this version:

Trevor Boyns. The development of managerial control in British firms, c.1880-c.1940. Journées d'Histoire de la Comptabilité et du Management, 2010, France. halshs-00465803

HAL Id: halshs-00465803

<https://shs.hal.science/halshs-00465803>

Submitted on 22 Mar 2010

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

The development of managerial control in British firms, c.1880-c.1940

Trevor Boyns

Cardiff University

Abstract

The late nineteenth and early twentieth centuries witnessed a growth in the use of information within firms throughout the industrialised nations. In her survey of this phenomenon in American businesses, Yates (1989, 1994) has stressed the importance not only of technological developments in relation to the office and the growing size of businesses, but also the growth of management ideology. In her study of the *tableau de bord* in France, Pezet (2009) has drawn attention to certain parallels between developments in the USA and France. This paper explores the extent to which developments in managerial control in Britain mirrored developments in these two countries. It is found that there were important similarities in timing and motivation, though differences in the precise approach championed.

Keywords: information, statistics, budgetary control, Higher Control, *tableau de bord*

1. INTRODUCTION

A central issue for any business, however large or small, is how is it to be controlled. In all companies there will be chief executive, a person who is ultimately responsible for making key decisions regarding the day-to-day operations of the business and making sure that the business follows the strategy laid down, whether this be determined by the chief executive or a board of directors. Efficient and effective control of a business, however, requires that the chief executive receives relevant data in a timely fashion, but what sort of data, and when? These were questions which increasingly exercised the minds not only of businessmen but also of a growing number of writers and commentators on management issues at the end of the nineteenth century and into the first half of the twentieth century. To date, a detailed study of this issue has been carried out in the USA by Yates (1989), while in a recent journal article, Pezet (2009) has considered the matter in France. This paper extends the geographical spread of such analyses by examining the case of Britain.

This paper is very much of an exploratory nature, and attempts to bring together various pieces of information which have been collected in an unsystematic manner as part of earlier research into other related topics. Some attempt has been made to fill in certain gaps, but much additional research needs to be carried out in order to tighten up the analysis and further develop the ideas expressed in this paper. The paper is structured as follows. In section 2 we briefly summarise the prior literature on the development of methods of control in the USA and France. This is followed in section 3 by an

examination of developments in Britain between the late nineteenth century and c.1960, where the focus will be on two important issues: the extent to which business decision-makers utilised statistics (both financial and non-financial) and the extent to which graphical methods and/or charts were employed for purposes of control. These issues will be examined both from the points of view of the literature and actual practice in British firms. In section 4, special attention is paid to a specific method of control championed by T.G. Rose, namely, Higher Control. Having set out the details of this method, its relationship with budgetary control and the tableau de bord method are considered in section 5. Our initial conclusions are presented in the final section of the paper.

2. THE DEVELOPMENT OF MANAGERIAL CONTROL IN THE USA AND FRANCE

2.1 *The USA*

During the latter decades of the nineteenth century and the early decades of the twentieth century, many countries experienced the rise of a new ideological approach to the issue of running a business, namely the systematic approach to management.¹ In the USA, Yates (1994) sees this ideological development as having played a key role in the growing adoption of the use of information within businesses for the purpose of control. While the development of technology, e.g. typewriters, pre-printed forms, duplicating equipment, storing and retrieval systems (e.g. vertical and card filing), analytical machines (e.g. tabulating, adding and calculating machines such as the Hollerith²) and presentational devices, clearly played an important role in the wider use of information, as did the growing size of businesses, in Yates' opinion these two factors alone are not sufficient to explain the full extent of the revolutionary growth in the use of information in American firms between 1880 and 1920. For Yates (1994, 47):

The systematic management ideology, with the premium it placed on managing through written information, reinforced the adoption of new devices and techniques, which in turn reinforced the ideology by reducing the cost and increasing the symbolic attractiveness of following it.

It was not, however, simply in terms of written information that change occurred. Busy businessmen found that, from the perspective of conveying large amounts of statistical information quickly and effectively, graphs had distinct advantages over tables, and while graphs had been used outside of business for at least a century, they gained increasing popularity within American business through the advocacy of systematisers and engineers-turned-managers (Yates 1994, 36). Graphs represented a simple and

¹ Yates warns her readers not to confuse this 'broad but amorphous' movement with the much more narrowly focused scientific management movement associated largely with F.W. Taylor (Yates 1994, 47 fn.40).

² On the link between the growth of big business and the need for increased information flows in the US see Chandler (1977), and on the growth of this demand and the mechanization of accounting in the US, see Wootton and Kemmerer (2007)

effective way to “make the information gathered and analysed available to decision-makers in an efficient and compelling form. As with forms and vertical filing, systematizers associated graphs with ‘modern methods’” (Yates 1994, 36). Parsons, the author of an early American text on Business Administration in 1909, put it thus: “In a modern organization the executive obtains [operating] information through a system of graphic records, a simplified summary of countless departmental statistics and itemized reports” (quoted in Yates 1994, 36).

According to Yates (1994), until the advent of the computer after the Second World War ushered in another period of rapid change, most of the transformation in the use of information begun in the late nineteenth century had run its course in the USA by 1920, with only slow, incremental changes occurring over the next three decades. What did occur during the interwar decades, particularly within some of the largest firms in the USA was the development of budgeting, or as it was more often called across the Atlantic, budgetary control. The extent to which budgeting really caught on in the USA is still a subject about which too little is known, but it clearly made inroads in a number of large American corporations by the Second World War (Chandler, 1977). Budgeting, however, was a significant development since it represented a method of controlling such businesses through financial numbers, but it did not especially make use of graphical methods of presenting them. In a recent study, Chandar and Miranti (2009) have shown how, during the 1920s, the American Telephone and Telegraph Company integrated the use of accounting and statistics as part of their methods of forecasting, budgeting and production planning.

2.2 *France*

France, like the USA and Britain, was touched by both the systematic and scientific managerial revolutions of the late nineteenth and early twentieth centuries. Perhaps not surprisingly, similar signs of development in the use of information can be discerned as occurred in the USA. In her recent study, Pezet (2009) sees many of these developments as being precursors to, first, the practical development and, second, the conceptualisation of the tableau de bord concept. Pezet (2009) argues that there have been four distinct phases in the development of this concept in France, the first two of these mirroring, though possibly with a lag, the developments associated with systematic management observed in the USA by Yates. Focusing her study on developments at three large firms, Saint-Gobain, Alais, Froges et Camargue (later Pechiney) and Lafarge, Pezet finds, at the end of the nineteenth century and beginning of the twentieth century, an emerging use of written reports which she has characterised as “narrating the running of factories” (2009, 106). During the interwar years there emerged a number of both complementary and competing methods for assisting managerial control: statistics, tableaux de bord and budgets. The use of statistics on sales, production, etc. to complement financial data was suggested in some quarters, though Pezet notes that budgetary control tended to be favoured over the tableau de bord method, notably by writers such as Satet (1936). Because of this, it was only after the Second World War, especially during the 1950s and 1960s, that Pezet finds the true emergence of tableaux de bord. These decades witnessed not just practical applications of different tableaux de bord at different levels within the

organisation, but also a “theorisation of the device” (Pezet 2009, 111). In the fourth and final period, since the 1960s, Pezet suggests that the *tableau de bord* has seen a “rapid slide towards a reporting device of a financial nature” (2009, 106).

Each new phase in the development of the *tableau de bord* has been marked by a significant shift compared to the previous phase. That between the first and second phases, for example, was marked by the widespread use of statistics, more particularly, in a forward-looking manner. Written, narrative reports from the first phase often included some data, as at Lafarge from 1905 onwards, but the data were originally dispersed throughout such reports rather than being presented in a systematic manner, and were inevitably of a backward-looking kind, recalling what had happened during the period being reported on. The use of data as a means for generating forecasts, as in budgetary control, for example, became an important focus of attention during the 1920s, when statistics began to be brought together in a consistent manner at companies like Alais, Froges et Camargue, often assisted by the utilisation of tabulating machines.³ There was also an increasing focus on commercial statistics, with Satet (1936), in his work on budgetary control, recommending the collection by those controlling a company of a wide variety of statistics, ranging from commercial, through industrial, to financial. Pezet (2009, 108) suggests that in this “we can see the first outlines of a *tableau de bord*” with Satet implying “strong complementarities between statistics and budgeting, making the former the prerequisite for the latter to exist”.

It is clear, however, that statistics were seen as something different from, and additional to, accounting information. The head of the financial department at Alais, Froges et Camargue in 1948, for example, clearly distinguished between financial accounting data and statistics (see Pezet 2009, 108). While it might be considered that such a view represented a reflection of the traditional standpoint of French accountants that any data generated outside of the accounting system was inevitably inaccurate (Berland et al, 2002), it has its echoes elsewhere in Europe. Thus, the most significant Italian theorist of the interwar period, Gino Zappa, referred to cost accounting as ‘statistics’, distinguishing it from financial accounting which was seen by him as the only true accounting. The development of the *tableau de bord* concept in France, however, involved not just changes in the use of statistics but also in developments in their mode of presentation. Most evident amongst the changes here was the use of charts or graphs to present data in a more visual form, as occurred, for example, at Lafarge in the 1960s (Pezet 2009, 115-116).

The brief overviews presented above have revealed a number of important issues associated with the development of managerial control in the USA and France. Amongst these are the following: (1) the growth in the use of information, and especially statistical data; (2) changes in the relative importance of financial and non-financial data for control purposes at different times; (3) the use of visual means of presenting the data through the use of graphs or charts; and (4), in France, the inter-relationship between statistics, budgetary control and the *tableau de bord*. The similarities that can be observed in developments in France and America, together with the existence of archival evidence showing that managers of French companies knew of developments across the Atlantic, has led Pezet to question whether or not the *tableau de bord* is truly a French

³ On the impact of such machines on the work of accountants in France, see Gardey (1997).

phenomenon. This echoes a comment made earlier by Lebas (1996, 90) who claimed that “The notion of *Tableau de Bord* is neither totally new nor exclusively French”, going on to suggest that “the decomposition of ROI [return on investment] into its constituent factors used at Dupont de Nemours [in the USA in the early twentieth century] represented an approach coherent with that of *Tableau de Bord*”. In the light of such suggestions that developments in the USA and France may not have been totally independent of one another, this paper seeks to provide another perspective on this issue by examining developments in approaches to managerial control in Britain between c.1880 and c.1960.

3. THE DEVELOPMENT OF MANAGERIAL CONTROL IN BRITAIN TO C.1940

3.1 *Developments in the literature*

It is not entirely clear when the use of statistics and graphs as regular tools of managerial control began to be championed in Britain, but books advocating their use began to emerge in Britain around the time of the First World War. However, even during the interwar years, the number of books on these issues was somewhat limited, though there were clear signs of a developing management movement in Britain at this time, building on the systematic management movement and, in some cases, Taylor’s concept of scientific management. A search of the British Library integrated catalogue reveals that many of the books published between the two world wars on the subject of graphs were for educational use in schools, colleges and universities, and not designed to be read by businessmen. One such book, originally published by Prentice-Hall in America in 1923, was *Charts and Graphs: An Introduction to Graphic Methods in the Control and Analysis of Statistics*, by the American, Karl G. Karsten. A British edition of Karsten’s work was published in 1924 by Sir Isaac Pitman & Sons Ltd., and this book was to have an important influence on Thomas Gerald Rose, one of the few British authors to write on the topic of charts in business. Karsten’s work, however, had been pre-dated in Britain by the appearance of A. Risdon Palmer’s work, *The Use of Graphs in Commerce and Industry* in 1921. This work, published by G. Bell, represented volume 3 of Bell’s Handbooks of Commerce and Finance series. No other books were published on the topic by British authors during the 1920s, but it would appear that works by two further Americans, John R. Riggleman, *Graphic Methods for Presenting Business Statistics* (McGraw-Hill, n.d., 230 pages) and William Henry Smith, *Graphic Statistics in Management* (McGraw-Hill, n.d., 360 pages). In the 1930s, the only British authored works appears to have that by Rose, *Business Charts* (94 pages), published in 1930 by Pitmans. While the number of books published in Britain on the topic of the use of graphs in business was small before 1940, this was not markedly out of line with the situation found in America at this time.⁴

⁴ Using information from Yates (1989) and the Library of Congress catalogue, nine works can be identified in the USA. Carl Parsons advocated the use of diagrams for managers in his work *Business Administration*, published in 1909, but it was not until a few years later that books devoted to the topic appeared: Willard C. Brinton, *Graphic Methods for Presenting Facts* (1914), and Stephen Gilman, *Graphic Charts for the*

In what follows we do not intend to provide an overview of the development of management ideas in the literature, but rather to focus on a small number of works which dealt especially with the use of statistics and graphs for the purpose of managerial control. In particular we focus on the work of two individuals: Edward Tregaskiss Elbourne (1875-1935) and Thomas Gerald Rose (1886-1963).

3.1.1 The work of E.T. Elbourne

One of the first works in Britain to advocate the widespread use of statistics and graphs in Britain was Elbourne's *Factory Administration and Accounts*, first published in 1914. Elbourne, formerly works accountant to Messrs. Vickers, Sons & Maxim Ltd., and departmental works manager to the Birmingham Small Arms Co. Ltd. (BSA), wrote his work while working for John I. Thorneycroft and Co. Ltd. (Brech 1997, 12). In 1915 Elbourne was appointed as assistant works manager of the Ponders End Shell factory and through his work there, and the people with which he came into contact, especially the accountant John Mann, Elbourne's ideas on administration became more widely recognised. His book was "recommended as a guidance-manual to managers and directors in other war-production factories and companies" (Brech 1997, 12), which led to several re-printings of the work during the period 1916 to 1918. During the latter year, at the end of a series of articles on 'labour administration' in *The Engineer*, Elbourne announced his intention to form "a society or institution for pursuing research in 'industrial administration'" (Brech 1997, 11-13). In 1919, together with his business partner, Henry Brindley, formerly his boss at the Ponders End Shell factory, Elbourne launched the Institute of Industrial Administration (IIA), one of a number of organisations which was formed during the post-First World War period to try to bring together those involved in various aspects of management.

Under Elbourne's guidance, the IIA focused in particular on the provision of education for managers, drawing up an extensive syllabus of studies during 1921-22 for launch in the IIA's journal in December 1922 and March 1923 (Brech 1997, 27). Shortly after this, however, the IIA became somewhat moribund for several years, though its

Business Man (c.1917). About the same time, two works combined cost accounting, statistics and graphs: [no author] *Costs and Statistics; Basic Cost Principles, Mapping Out the Cost System, Graphs and Statistics, Expense Control* (Chicago & New York: A.W. Shaw Co., c.1914 – 200pp.), and G. De Witt Bender, *Accounting and Business Secrets; A Ready Reference Book of Accounting Principles, Forms, Charts, Rules, Tables...* (Seattle: Metropolitan Press, c.1920 – 64pp.). Further works appeared in the 1920s: Bertie C. Forbes, *Business Analysis with Charts; or Charting as a Pathway to Success* (Chicago: Business Charting Institute, c.1921 – 35pp.) and, more significantly, Allan C. Haskell, *Graphic Charts for the Business Man* (Codex Book Co. of New York, 1922). The latter work appeared in three editions during the 1920s, increasing in size from 250 pages in the first edition of 1922 through to 451 pages in the third edition of 1928. Only three other works devoted to graphs appeared in the interwar years: Winfield A. Savage, *Graphic Analysis for Executives* (New York: Codex Book Co., 1926 – 164pp); A.L. DeLeeuw, *How's Business? Industrial Control by Graphics* (New York: Codex Book Co., 1928 – 205pp) and Willard C. Brinton, *Graphic Presentation* (Brinton Associates, 1939 - apparently a revised version of his earlier, 1914, work). In France, Satet published the first edition of *Les graphiques, moyen de direction des entreprises*, a short work of 64 pages in 1931 which subsequently appeared in at least 12 editions over the next forty years. The 5th edition of 1944, co-authored with Charles Voraz, represented a completely re-written work, extending to 293 pages, while the 12th edition, also co-authored with Voraz, appeared in 1970.

syllabus was followed in a number of venues, most notably the Regent's Street Polytechnic in London. Despite the problems which becalmed the IIA in the mid-1920s, Elbourne's work clearly continued to have an impact. In 1919 and 1921 'new' editions of his text appeared, the 1921 version be re-titled *Factory Administration and Cost Accounts*. The 1921 edition was reprinted in 1929 and a 'students' edition was published in 1931. Three years later, in 1934, Elbourne (assisted by K.B. Elbourne and P.J. Amer) had published a new work entitled *Fundamentals of Industrial Administration*, which appeared in four editions between 1934 and 1947, the fourth edition (edited by H. McFarland Davis) being reprinted five times between 1953 and 1967. But what was Elbourne's view of the use of statistics and charts, and how did this change over time?

A key objective of Elbourne's 1914 book was to emphasise his view that accounting, be it in relation to works accounts or financial accounts, and works management were part and parcel of the same phenomenon – they should not be considered separately as he suggested had been the case in the past. Elbourne pointed to the fact that works (i.e. cost) account figures could be used for administrative purposes, but in order to “avoid confusion with the accounts as such” he considered it “convenient to speak of the data derived from the accounts for administrative purposes as administrative statistics” (1916, 381). He also pointed out that “The principle on which a works accounting system is constructed should be such as to provide with the minimum of analysis or reconstruction, the essential statistics necessary for exercising continuously efficient control” (Elbourne 1916, 381). While stressing the benefits of statistics to the general manager and, especially, the works manager of a company, Elbourne also urged caution in their use (1916, 382):

It is generally recognised that the value of statistics lies in their availability for comparison, and that averaging is necessary to get their true import.

From this follows two main requirements in statistics, firstly, that the scope of the figures to be compared shall be identical, and secondly, that the basis upon which averages are calculated shall be such as will not misrepresent the facts underlying the original figures.

In this last regard, it was vital that “The works manager should apply his practical experience of the conditions of the factory so as to ensure that the statistics reflect the real facts of the case” (Elbourne 1916, 381).

Elbourne also noted the usefulness of graphs and charts for presentational purposes, referring to their use for examining issues such as the “relative burden of works expenses that is carried by each department”, and noted that “graphical charts of the shop charge totals for each amount (sic.) period will indicate whether the normal departmental expenses are being met” (both quotes, Elbourne 1916, 384). Elbourne also made reference to the mode of presenting the data, talking of charts that are “cumulative in form, so that the total of each period is added to the previous total, and the curve rises from zero at the beginning to the year's total at the end” (1916, 384). In relation to the curve to be used for plotting the departmental expenses apportioned and the shop charges applied, Elbourne noted that (1916, 385):

Two diagonal lines can be also drawn, one to represent the reference total of departmental expenses assumed in working out the normal shop charge rates and one to represent the total departmental expenses of the previous year spread evenly over the fortnightly account periods.

Elbourne went on to note that charts of this sort help to provide “a very real insight ... as to the trend of the relative factory efficiency” (1916, 385). In the main the focus of the statistical information to be collected and presented in graphs was of a financial nature drawn from the accounts (both works and financial). Indeed, it was later claimed that: “The object of keeping statistical records within a business is, in the first instance, partly to supplement and partly to explain the financial accounts for the purpose of achieving better administration” (1947, 256).

While Elbourne noted the potential of charts for examining trends in factory efficiency, the emphasis in early editions of his work was on the use of charts for comparing the present with the past, i.e. looking backwards. While efficiency was a concern for Elbourne, there was no direct reference, as such, to issues of managerial control, either in the text or in the index to his work. Indeed, the latter refers to just two issues of control: control of staff and stock control. Scientific management did warrant an entry in the index, but the issue of forecasting did not.

3.1.2 T.G. Rose⁵

Within the space of five years in the middle of the interwar period, Rose authored two works, both published by Sir Isaac Pitman & Sons Ltd.: *Business Charts* in 1930 and *Higher Control. A Manual for Company Directors, Secretaries and Accountants, etc.* in 1934. The former was one of a small number of books on the topic of the use of charts in business published during the interwar period⁶, while the latter, which built on the ideas of the former, was the sole work to discuss the concept of Higher Control. The aim of *Higher Control* was to “portray a method of executive control by means of which danger points in management are automatically brought to attention” (Anderson 1935, 111). A centre-piece of this concept was the advocacy of graphs and moving annual totals (MATs) to determine the trend of progress in a business. The inspiration for the use of MATs in *Higher Control* had been Rose’s discovery of the Z-chart, a series of three lines plotted on the same graph forming a chart that looked like a figure ‘Z’. The lower of the two horizontal components comprised a plot of the total for each period during the current year, while the higher one represented the MAT for the same variable. The diagonal component of the letter ‘Z’ was created by the cumulation over the year of the individual period figures. As Rose (1968, 17) pointed out, he had first discovered this concept on reading Karsten’s *Charts and Graphs* c.1928 while researching his own work, *Business Charts*. Rose, however, did not specifically advocate the use of the Z-chart, placing the emphasis on plotting the MAT and the current periodic data on the same

⁵ A fuller biography of Rose can be found in the appendix to this paper.

⁶ The book “was the outcome of a series of nine articles on Business Statistics which were published between 27th September and 23 November 1929 in the *Times Trade and Engineering Supplement*” (Rose 1930, v).

graph, reminiscent of Elbourne's concern with presenting more than a single set of data on each graph.

Rose's approach, therefore, favoured the use of what later became known as the 'curmat' chart, i.e. the 'Z'-chart without the cumulative diagonal line (see Rose and Farr 1957, 13, 54). This approach was justified by the fact that the removal of the cumulative line enabled the chart to be made smaller, while it was pointed out that it was the MAT that tended to be used as the basis for planning, not the current or cumulative lines.

3.2 *Developments in Practice*

3.2.1 *Pre-1920*

As in the USA, the second half of the nineteenth century witnessed the growing use in certain businesses in key sectors of British industry, such as the coal industry, iron and steel, etc., of written reports provided by executive officers to owners and non-executive directors of registered companies. Colliery managers, especially in the larger concerns, as the key executives in the coal industry, were required to submit regular reports on the progress of the collieries under their control to the boards of directors of the companies which controlled them. These reports often included statistical data on production, days worked, number of idle days, etc., as well as cost per ton figures, not just for the current period but also for the previous period (Boyns 1993; Boyns and Wale 1996, 68-76). In the iron and steel industry, similar returns were required from the managers of different works departments by the general manager, who then reported key information up to the board. The reports from the various managerial levels would, as in the coal industry, often include large amounts of statistical data, of both physical quantities (e.g. output tonnage, yields, etc.) and of a financial nature (Boyns and Edwards 1997). Graphs presenting such information can also be found in the archives of some companies, especially in the late nineteenth or early twentieth centuries, but whether their use was a regular occurrence or not is uncertain, it not being clear if the small number of such graphs is due to the intermittent nature of their production or the limited survival of what were regularly produced documents.

One company about which detailed information exists is Hans Renold Ltd., an engineering firm based in Manchester. The company had long reported financial and other statistics to board meetings, thus we find, at the company's Head Office meeting on 9 April 1915, reference to the presentation each month of: a Bank forecast, indicating Customers' overdue accounts and position of doubtful debts; a monthly trading account and balance sheet; sales & orders; and 'Cost Charts' (MCL, M501 650.0522 HR 910/6). During the remainder of the war years numerous changes were made to the firm's organisational structure and the data collected and presented to board meetings. At the Head Office meeting held on 19 March 1918 it was noted that together with the balance sheet for February and Trading Account for January, they had discussed the budget for March to August inclusive and the 'Business Barometer' (MCL, M501 650.0522 HR 910/10). The nature of this 'Business Barometer', which was to be presented on a weekly basis (as with the budget statement), contained a mixture of financial and non-financial data. There were figures for 'outgoings', i.e. actual wages (hourly, weekly, monthly and

total) and ‘commitments’, and figures for ‘incomings’, i.e. actual figures for ‘chains and accessories’, ‘wheels’, ‘fuses and parts’, ‘shells’ and ‘turnbuckles’ and ‘commitments’, i.e. orders received for various products. The ‘difference in + out -’ was also recorded, as were statistics on the number of employees, broken down into those paid hourly, weekly and monthly, and for overtime, both in terms of the hours worked and cost. The final figures in the barometer related to the company’s bank balance (MCL, M501 657.471 HR 917/4).

3.2.2 *c.1920-c.1940*

The increased advocacy of the use of statistics and graphs in books relating to business was paralleled by their apparent growing use within British businesses, though the rate of progress is not, as yet, well understood. One source of information on this issue is the archives of the Management Research Groups (MRGs). The MRGs came into being in late 1926/early 1927⁷ as a mechanism for the interchange of management ideas and practices amongst non-competing firms, i.e. each group never contained more than one firm from any industrial sector, in order to foster a willingness to exchange views and practices and discuss ideas, something which it was felt would be less likely to occur between firms competing in the same sector. The initial focus was on a small number of groups, of which MRG No. 1, representing large industrial undertakings was probably the most significant, but the number of groups expanded rapidly to nine by 1930 (BLPES Ward W/3/30/7, List of members).⁸

The annual reports and other surviving documents of the MRGs reveal concerns amongst members in the late 1920s and during the 1930s with issues such as the use of statistics and graphs, managerial control, and the fundamentals of organisation and administration. These concerns are reflected in the discussions held within the various groups at different times. Thus, during 1929, MRG No. 6 discussed ‘graphical control’ (BLPES Ward W/3/29/7) while the 1930 annual report notes the publication of a report on ‘Control Chart for Chief Executive’ (BLPES W/3/30/7, ff.4-5), while at their meeting on 18 July 1934, the members of MRG No. 1 considered methods of visual presentation of statistical and other facts for the use of executives. Amongst those companies which provided information as to their use of charts and/or examples of the charts that they used for the purpose of fostering discussion were Rowntree & Co. Ltd., the Associated Equipment Co. Ltd. (AEC), and the Austin Motor Co. Ltd. (BLPES Ward W/11/34/19). While AEC merely stated that they “make use of charts for various purposes” (BLPES Ward W/11/34/19, f.1), Austin Motors, which operated a sophisticated system of

⁷ The first annual report of the MRGs covered the period to 31 December 1927. In this it was noted that the decision to establish such groups had been taken on 1 June 1926, when it was determined to form “an Industrial Group consisting of large-sized firms” (BLPES Ward Papers W/3/27/7, f.1). The first official meeting of this group took place on 2 February 1927, having been upstaged by meetings of Industrial Groups 2 and 3. Group 2 comprised firms employing between 500 and 2,000 employees, and met officially for the first time on 21 January 1927, just over a week after Group 3, a group containing firms employing up to 500 persons, which had met officially for the first time on 13 January 1927. At a meeting held on 23 June 1927 the name of the movement was changed from ‘Industrial Groups’ to ‘Management Research Groups’ (BLPES Ward Papers W/3/27/7, f.1).

⁸ Total membership of the nine groups in 1930 was 103 companies.

budgetary control (see Perry-Keene 1922-23), indicated that though they utilised “three main notations” for checking progress, they made “comparatively little use of purely graphic method in fact presentation, as we find that data presented in regular form conveys adequately the impression intended” (BLPES Ward W/11/34/19, ff.1-2). Rowntree & Co, indicated that they “did not use graphic methods extensively, and where we do use them they are mostly the well-known and simple types” (BLPES Ward W/11/34/19 - memo from Rowntree & Co., dated 2/7/34). However, although it was also stated that Rowntree’s had “not got a complete range of charts covering various functional activities and leading up to a Chief Executive’s control”, as would have been the case if they had adopted Rose’s concept of Higher Control, they noted the use of “plain arithmetic line charts, bar charts, and ‘Z’ charts”, but not ‘ratio charts, Gantt charts, calculating charts, or circle charts, except possibly in odd and isolated cases” (BLPES Ward W/11/34/19 - memo from Rowntree & Co., dated 2/7/34). It was also recorded that “For the purpose of studying trends we also use weekly moving annual total charts for groups of products...” (BLPES Ward W/11/34/19 - memo from Rowntree & Co., dated 2/7/34)

Thus, even amongst companies which are known to have been amongst the most progressive of British large businesses, the use of charts for managerial control purposes does not seem to have been extensive in the mid-1930s. Indeed, BSA, which had always included a large range of data in the ‘Statistical folder’ of reports received by each director prior to the monthly board meeting during the interwar years, only introduced graphs into the folder in April 1936.⁹ In response to this development, one of the directors, A.J.H. Pollen¹⁰, in a letter to A.E. Berriman, assistant managing director of BSA, dated 6 April 1936, while approving of the development of the use of graphs, nevertheless suggested that perhaps they should be made in the form of a Z-chart. Of this type of chart Pollen commented that it is “quite simple and far more intelligible than merely scale graphs, the real significance of which it is very difficult to grasp, especially when not made on squared paper” (CRO, PA594/2/1/2/22).

Moving away from the issue of graphs, we find somewhat more broad ranging discussions within the MRGs, such as that on the ‘Records necessary to control of a Business’ discussed by MRG No. 5 in 1928 (BLPES Ward W/3/28/7, f.9), and as reflected in two reports published in 1931 on ‘Costs and their Relation to Control’ (prepared by the costing sub-group of MRG No. 6) and ‘The Scope of Scientific Office Management’, a reprint of a paper given by W.H. Leffingwell to the American National Association of Office Managers (BLPES Ward W/3/31/7, f.6). Other discussions conducted by the MRGs were more specific, including a growing concern with the issue of ‘budgetary control’. This topic first featured in a meeting of MRG No. 3A in 1928 (BLPES Ward W/3/28/7, f.8) while during 1929 MRG No. 6 discussed the matter (BLPES Ward W/3/29/7). The first two meetings of MRG No. 7 in 1931 were devoted to

⁹ All of the charts were of monetary values and related to either sales (individual charts were presented for cars, motor cycles and pedal cycles) or orders received (separate charts for guns and ‘Sparkbrook’, one of the company’s works). Monthly data was plotted on a cumulative basis for the period of the current financial year to the end of February 1936 (a red line) and, for comparison, also shown (as black lines) were the annual cumulative figures for 1933/34 and 1934/35 (except for the BSA Group Net Sales chart which only had comparative data for 1934/35) (CRO PA594/1/1/3/160).

¹⁰ Pollen played an important role in the development of the Higher Control concept – see section 4.1.1 below.

the topic of budgeting, in particular sales and sales expense budgets (BLPES Ward W/3/31/7, f.19). In 1933 budgetary control was very much to the fore: "In March the system of Budgetary Control which has been of enormous assistance to Karrier Motors Ltd. in facing the difficult conditions of the last few years was described in detail" at a meeting of MRG No. 3 (BLPES Ward W/3/33/7, f.10).¹¹ At a later meeting of the group, when budgetary control was further discussed, one member "described how he had applied part of the Budgetary Control technique of Karrier Motors Ltd. with immediately satisfactory results" (BLPES Ward W/3/33/7, f.11). In late 1933, MRG No. 1 set up a committee to examine the utilisation of budgetary control within the member firms and a full report was produced later the following year (for fuller details see Boyns 1998). In 1935, at the last yearly meeting of MRG No. 2, which was "restricted to Directors and other officers with equivalent responsibility" (BLPES Ward W/3/35/7, f.13), a discussion on 'Profit Control' was opened by F.L. Impey (of Morland & Impey Ltd.). It was recorded that a "large part of the subsequent general discussion was on aspects of Budgetary Control" (BLPES Ward W/3/35/7, f.13).

Paralleling this increasing concern with the issue of budgetary control, the MRG archives also reveal a concern with other aspects of control. Thus, in 1929, a 'Higher Administration and Control' sub-committee of MRG No. 1 was formed. The discussions of the meetings of this sub-committee, which met for the first time on 29 October 1929, together with the various memoranda supplied by members, are instructive as to practices of the time (BLPES Ward W/11/29/19?). The aims of the committee were declared to be "the joint study, from experience, of the essential principles underlying the effective control, financial and administrative, of a large business" (BLPES Ward W/11/29/19?, f.1). C.W. Reeve, managing director of AEC "suggested that the Sub-Committee should set itself to decide what a Managing Director wants, and when he wants it; i.e. what figures, whether these figures should be estimated or actual, and whether they should work by calendar months or on 13 4-weekly periods" (BLPES Ward W/11/29/19?, f.3). B.S. Rowntree concurred with this view, stating that he "thought it would be a good idea if some one could draw up a statement summarising the facts necessary for running a business" (BLPES Ward W/11/29/19?, f.4). One upshot of the sub-committee's first meeting was that all members of MRG No. 1 were invited to submit a statement "summarising the natures of their business and the kinds of accounts or statistical returns found necessary for effective control, especially in relation to the four main functions of Purchasing, Production, Finance and Sales" (BLPES Ward W/11/29/19?, f.4).

Memoranda were received from the English Electric Company (electrical goods), Rowntree & Co. Ltd. (chocolate), Pilkington Brothers Ltd. (glass), the Dunlop Rubber Co. Ltd. (tyres), and the Gramophone Co. Ltd., while comments were also made at the first meeting by representatives of Lever Brothers Ltd. (soap and chemicals), Wolsey Ltd. (wool textiles) and AEC (motor coaches) (BLPES Ward W/11/29/19?, f.1). They indicate the use of a mix of both statistical returns relating to quantities of goods produced or sold, as well as financial returns in relation thereto and relating to costs and profits. At English Electric, for example, it was noted that under manufacturing, it was essential to know (BLPES Ward W/11/29/19?, English Electric memo):

¹¹ The fluidity of membership of the MRGs is reflected in the fact that, by 31 December 1933, Karrier Motors Ltd. was no longer a member (BLPES Ward W/3/33/7).

- a. that the number of orders to the factory is being maintained at the proper rate,
- b. that the output from the factory is following a pre-determined programme.
- c. that the cost of production is competitive, and is near the estimated figure on which selling prices are based.
- d. that the on-cost charges in the factory are not increasing and are being absorbed.
- e. that the value of defective products, due either to unsuitable material or manufacturing errors, is reasonable.

Under sales of final products the requirements were to know:

- a. the competitive market prices,
- b. that the rate of sales is being maintained at the proper figure.

At the Dunlop Robber Co., which had factories in various parts of Britain and plantations and cotton mills overseas, it was noted that all main statistics, both financial and those relating to quantities of product made and sold, “are centralised in the Chief Accountants Office in London and submitted direct to the Managing Director” (BLPES Ward W/11/29/19?, Dunlop memo, f.4). Different types of report were clearly presented at different frequencies at the Gramophone Co. Ltd.: net sales, shipments of machines, returns of staff and wages, and a Head office financial statement were reported weekly, with other figures being returned monthly or half-yearly as considered appropriate. It is clear that not just the current period’s figures were returned, but also those for cumulated periods and comparative figures for the same periods for previous years.

In the discussion which took place at the first meeting of the sub-committee on 29 October 1929, it was found that the frequency with which returns were submitted to the managing director varied from monthly to half-yearly depending on the nature of the return, while in “most cases returns having a fundamental bearing on policy were submitted quarterly” (BLPES Ward W/11/29/19?, f.2). The subsequent survey of members, however, indicated that managing directors preferred to have data on a four weekly basis. In the view of C.W. Barnish, managing director of Lever Brothers Ltd., it was only necessary to control profit and capital expenditure, most other controls being “subservient to these two” (BLPES Ward W/11/29/19?, f.2). Production returns, Barnish noted, “were drawn up monthly in each department to see if a profit or loss was being made, losses being immediately investigated” (BLPES Ward W/11/29/19?, f.2). V. Watlington, managing director of English Electric, indicated that he “considered statistics less value as absolute measurements than as standards of comparison and indicators of trends” (BLPES Ward W/11/29/19?, f.3). He also indicated that English Electric “set a ‘Bogey’ figure for each department, and a failure to reach the “Bogey” was reported to the Managing Director and investigated” (BLPES Ward W/11/29/19?, f.3). Alfred Salt, a director of Wolsey Ltd., noted that his company used standard costs, while Lord Cozens-Hardy, managing director of Pilkington Brothers, referred to the benefits his company had secured in “the classification of orders and accountancy problems generally ... by the use of the Hollerith system” (BLPES Ward W/11/29/19?, f.4).

Although the Higher Administration and Control sub-committee of MRG No. 1 was only in existence for a short period of time in late 1929 and possibly early 1930¹², during 1930, the members of MRG No. 3A decided to undertake visits to each other to examine the issue of 'Higher Control'. It was explained that, "At each visit the host Company indicates the essential factors upon which the success of the business depends. The Group then examines the method by which these factors are controlled" (BLPES Ward W/3/30/7, f.15). It is clear therefore, that at the end of the 1920s and during the early 1930s, despite the existence of competing ideas such as budgetary control, higher control was an issue that was on the agenda of the top management personnel in a number of British firms. The appearance of Rose's book, entitled *Higher Control*, in 1934, therefore appears to reflect a concern which had a contemporary element to it. But what, precisely, was Higher Control, and from where did the idea emanate?

4. HIGHER CONTROL

4.1. *Higher Control*

4.1.1 Origins

Higher Control was clearly a development of the systematic management movement in Britain during the early twentieth century, and especially the interwar period, as exemplified in Britain by the development of the IIA and the MRGs. Although not involved with either organisation from the outset, Rose became an important player in the IIA during the 1930s (being vice-chairman from 1932-37 and chairman 1938-43) and, through his links with Arthur Joseph Hungerford Pollen and Linotype & Machinery Ltd., with the MRGs for a short, but important time, in the early 1930s.¹³ While it was Rose who publicised the concept of Higher Control through his book, first published in 1934, the concept was originally conceived and developed by Pollen, the chairman and managing director of Linotype & Machinery Ltd. (L&M), a medium-sized manufacturing company operating a works employing 2,000 workers, for his own personal use between 1927 and 1930 (Rose 1968, xv).¹⁴ Rose acknowledged his debt to Pollen in the opening sentence to the preface to the first edition of *Higher Control*: "The bold idea that it should be possible to build up an interlocked system of returns by means of which the activities of an industrial undertaking could be efficiently controlled must be ascribed to Mr. A.H. Pollen" (Rose 1934, xi). Shortly after taking up the post of chairman and managing

¹² This was a fairly normal procedure – sub-committees were formed to examine a specific issue and once that task had been completed they were wound up and a different sub-committee would be formed to examine another topic as and when considered desirable.

¹³ L&M was a member of MRG No. 6 as at 31 December 1930 and 1931 (and may have been a member in 1929, but the membership list for this year has not survived). It was not listed as being a member as at 31 December 1932, suggesting that the company may have relinquished its membership following Pollen's departure to BSA during the year.

¹⁴ Rose (1968, 3) notes that, with the assistance of Tom Drake, the works manager, and Cyril Summers, the chief accountant, from 1926 Pollen gradually 'created a network of facts and figures which functioned so smoothly and effectively that it enabled him to keep a close control from London over what went on at the factory [located some 190 miles away in Altrincham, Cheshire]'.

director of L&M in 1926, a post which he held until July 1932¹⁵, Pollen called in Rose, who had just commenced a career as a free-lance consultant, to help him reorganise aspects of the business. The two appear to have worked together throughout Pollen's tenure of office at L&M, developing and refining their ideas, and had a great mutual respect for each other. It is not clear precisely when the concept of Higher Control was born, though it seems to have been given an early, possibly its first, public airing on 19 May 1931 when Rose presented a paper on the topic to the IIA (Rose 1954, 66).

Later in 1931 Pollen suggested the adoption of such ideas at BSA, where he was a director. BSA was an engineering conglomerate which found itself in deep financial trouble at the beginning of the 1930s, due to poor strategic decisions taken in the 1920s and the impact of the world slump, and was in urgent negotiations with its bankers regarding a financial package to stave off bankruptcy. Seven months before he resigned the L&M post to take over, albeit briefly, as chairman of BSA, Pollen suggested, in a letter to Percy Martin, BSA's managing director, dated 29 December 1931, that he might like to avail himself of Rose's services. He noted in this letter that Rose (CRO, PA594/2/1/2/23):

was very useful to me when I took over L.&M., and ... is a noted master of relevant return figures, graphs, etc. It seems to me that this is just the kind of man that the bank would want, in preference to an accountant, and I think his references – Beardmore's, the Securities Management Trust, etc., would be just what the bank would find impressive.

Knowledge of Higher Control was more widely disseminated in 1932 when an accountant employed by L&M, Mr. B. Biddle, ACA, read "an extremely practical paper on Higher Control" before MRG No. 6 (BLPES Ward W/3/32/7, f.16). Two years later, in 1934, the idea was made publicly available through the publication of a full account of the concept in Rose's book.

4.1.2 The concept of Higher Control

The precise contents of the 1931 and 1932 papers on Higher Control delivered by Rose and Biddle respectively are, unfortunately, not known. However, an early spelling out of the basic approach is to be found in a letter from Pollen to BSA's chairman, Percy Martin, dated 30 December 1931. In this letter, the importance of financial accounting data was clearly outlined (CRO, PA594/2/1/2/23):

The fundamental idea is to segregate the factors that determine the profit making capacity of the undertaking, the turn-over or sales at the head of the column, and

¹⁵ Linotype & Machinery was the British arm of an effective three member Linotype monopoly comprising the American firm, Mergenthaler Linotype Co. of New York, and a German firm. It had been founded in 1898 by Joseph Lawrence, Pollen's father-in-law, and Pollen had been the company's first managing director between 1898 and 1904. He continued to be a non-executive director after 1904 until returning as managing director in 1926. For further biographical details of Pollen see Davenport-Hines (1985).

then the several deductions that must be made before arriving at the trading profit....

It is found to be a comparatively simple thing for all these factors to be returned at required intervals – say monthly – and a balance sheet got out showing exactly where the different factors are coming up to or falling behind expectation. This gives an immediate running check on your factory, your selling organisation, and your company organisation, which shows at once whether your plans are being realised, and the exact place where examination is necessary either to correct the plan or to enforce it.

The record of Biddle's presentation to MRG No. 6 in April 1932 reveals that the various reports produced as part of Higher Control not only described the position at the works but, in particular, laid bare the business, trading and financial positions of L&M (BLPES Ward W/3/32/7, f.16). Although it had grown out of a system of works control, and represented an attempt to extend the principle of this control to the company as whole (Rose 1947, 94), the original version of Higher Control nevertheless relegated works control to a minor role, focusing instead of these three key 'positions'. Thus, Rose defined Higher Control in the first edition of his work as (1934, 67):

a monthly survey of the functional activities of a commercial undertaking, carried out from the business, trading, and financial viewpoints, and based upon direct trend comparison between the position at the moment and the position at the last financial year.

When the fourth edition of Rose's work was first published in 1944, a fourth 'position', the 'technical position', was added, representing a restoration of works control to a more significant position in the whole scheme of things. The rationale for this was explained thus (Rose 1947, 92):

As the method was gradually adopted by firms in industry, it became clear that the technical aspect of affairs also needed watching. This was foreshadowed in a paper read by the author before the Institute of Industrial Administration in 1932 entitled "The Management Audit".... At that time it was not sufficiently realized that the whole field of technical activities, covering the manufacturing processes, the problems arising from plant, machinery and layout, the experimental and development work, and other works naturally had, directly or indirectly, considerable influence upon the business, trading, and financial figures of the company. They needed therefore just as much watching by the chief to ensure that the duties were being properly handled, and were not being neglected or badly managed.

The concept of the 'technical position' comprised, in the main, much of what had originally been discussed in the first edition of *Higher Control* under the title of 'works control' (Rose 1947, ix-x). In that first edition, 'works control' had formed the substance of the penultimate chapter (ch. XII) and it was indicated there that it was based on "works or cost accounts in precisely the same manner as company control is based upon the

financial accounts” (Rose 1934, 225). The key function of works control was seen as being the attainment of “an accurate picture of the balance between production and sales” (Rose 1934, 226). The six key indicators which made this possible were: orders received at works; order book at works; stocks (of finished goods); total employees; nightshift and overtime; and works output. It was also recognised that there was an additional range of figures which would be “of considerable value in increasing the efficiency standards of the place” (Rose 1934, 226). The elevation of the status of ‘works control’ through the instigation of the ‘technical position’ in the fourth edition was reflected in the fact that the material was now included in chapter VII, coming immediately after the chapter on the business position and immediately before those on the trading and financial positions. However, it should be noted that the report on the ‘technical position’ would need to include elements not formerly recognised under works control, in particular, reports from the chief engineer and the personnel/labour manager. Despite the fact that Rose considered that many aspects of the work of these two individuals “does not readily lend itself to statistical record” (1947, 94), certain monthly statistics relating to the work of these person’s departments were seen as being of interest to the chief executive, for example, the number of different types of people employed in the business and in each department, and the number of new production drawings, traces, etc. issued (Rose 1947, 116-117).

The placing of the chapter on the technical position between that on the business position and those on the trading and financial positions reflected the fact that the data relating to it could be available very shortly after the end of the relevant trading period, and could thus be presented alongside those for the business position in the Part I report received by the chief executive; reporting could occur more quickly than for the trading and financial reports which comprised Part II of the regular reporting cycle. The Part I reports should ideally be with the managing director within three days of the end of the month and those forming Part II should be with him within three weeks of the month-end (Rose and Farr 1957: pp.10-15). Rose recognised that while the other three control aspects “deal more with the statistical side of the business”, the “Technical Position is the section in which most of the general comments on the day-to-day happenings in the works will arise, although many of them may not be of a technical nature” (1947, 117-118). In the seventh and final edition of *Higher Control*, Rose noted that technical position represented a control aspect which was “far more specialized and individual than the other three, as its structure naturally depends upon the nature of the business” (1968, 67). Rose also noted that the ‘technical position’ represented the place where “the data relating to all the miscellaneous activities which are not directly part of the Business, Trading, and Financial Positions in a working community are brought together” (1968, 67).

4.1.3. The applicability of Higher Control

It is clear that the method of Higher Control was considered to be applicable to all firms, whatever their size. In his foreword to the American version of the work, H.B. Maynard,

president of H.B. Maynard and Co. Inc.¹⁶, pointed out that, although the technique had been worked out initially in a medium-sized manufacturing company:

The system of higher management controls described in the pages that follow not only gives the chief executive of the small, medium-sized or large business the information he needs to direct his business properly, but it presents it in such an easy-to-interpret form that he will find it requires much less time to absorb than the less complete and less well-coordinated data he has been using in the past.
(Rose and Farr 1957, vii)

It was pointed out, however, that the technique had a special advantage for the small business, namely that it cost little to install, a view which had been recognised by the reviewers of the first edition of *Higher Control*. Anderson (1935, 111), for example, having praised the clarity of the presentation and the helpfulness of the charts contained in the work, went on to note the simplicity, “ease and small costs” associated with the method advocated. Furthermore, it was claimed (Rose and Farr 1957, p.18) that:

Once the simple structure has been set up, it need never be changed however much the business may develop. With that development, the owner/manager is gradually forced further and further away from the day-to-day details, but he will still remain just as much in contact with what is going on.

In terms of the overall claims made for the concept of Higher Control, Pollen suggested that it “goes far to making any business manageable ... [and] makes the responsibilities of a director a burden that any man of intelligence and some practical experience can safely undertake” (Rose 1934, ix). While Pollen’s opinion was clearly biased, the reviewers of the first edition of *Higher Control* were sympathetic to many of the claims made. Rose’s “plea for the presentation of accountancy results from the point of view of assisting management” was noted by the unknown reviewer in *The Accountant*, who went on to add that “there is little doubt that the intelligent and immediate presentation of figures is the keynote of industrial management” (both quotes 1934, 472). The British economist P. Sargent Florence’s overall view of Rose’s book was that “The widespread adoption of his system of control may well make the co-ordination within large-scale organisation more easy, and increase the actual size of the unit of control nearer to the optimum” (1935, 344). The American accountant Arthur G. Anderson referred to the book as ‘worthwhile’, and noted the author’s “enthusiasm and thoroughness” (1935 111). However, neither the American accountant W.P. Fiske, nor the unknown reviewer for *The Accountant*, considered that what Rose was telling his audience was anything new. Fiske concluded that “there is little really new in this book” (1936, 451-452), particularly from an American perspective.¹⁷

¹⁶ It should be noted that Donald E. Farr, Rose’s co-author, was vice-president of this company.

¹⁷ In opening his review, Fiske had warned readers that, in order to appreciate the work, they should read the book in the knowledge that it was written from a British background – implying that British firms did not use techniques as advanced as those used by American firms.

One final aspect of Higher Control to which attention should perhaps be drawn is that both Pollen and Rose likened it to the audit function¹⁸ in accounting (Rose 1934, ix-x):

It discharges ... for management, the task that auditors discharge for accounts and finance. Indeed it does more. The audit guarantees the shareholders that there has been no misrepresentation, no malversion of funds. Higher control is an assurance that the proofs of mismanagement are so unmistakably and swiftly disclosed that errors can be retrieved before their consequences become irreparable.

5. HIGHER CONTROL, BUDGETARY CONTROL AND THE TABLEAU DE BORD

5.1 Higher Control and budgetary control

The concepts of Higher Control and Budgetary Control both began to be discussed in earnest in Britain at or around the same time, i.e. the second half of the 1920s and during the 1930s. But to what extent do the links between these concepts go any deeper than this? Rose himself was clearly aware of the technique of budgetary control and spoke of the differences between the two concepts in the first edition of *Higher Control*. The most fundamental of these differences, in Rose's view, was that while budgetary control examined departures from a theoretical ideal, Higher Control recorded what was actually happening (1934, 75-76). Because of this, higher control avoided the "considerable amount of preliminary work in setting the ideal, or budget" (Rose 1934, 76). There was no need for the establishment of the complex structures required for setting a budget and, it was claimed that Higher Control "achieves a greater measure of guidance with an infinitely less amount of labour and expense" (Rose 1934, 76). Going further, Rose claimed (1934, 77):

ordinary accountancy methods provide little or nothing of what might be called real control, and budgetary control is not only a highly complicated affair, but also falls short in that it fails to provide that effective¹⁹ comparison with the last financial year which is so essential. Higher control, with its balanced consideration of the business, trading, and financial activities all surveyed from the common comparative basis of last year's annual result, on the trend method, and arranged so that responsibility for success or failure can be assigned in the right direction, is the only effective system²⁰ by which an adequate review of the industrial position of a company can be attained.

¹⁸ The concept of the management audit was first aired in 1932 when Rose presented a paper on the topic to the IIA. This was published later the same year as *The Management Audit*, and was subsequently reprinted with minor additions and changes in 1944 and 1961.

¹⁹ In the fourth edition (1944), the word 'effective', used in the first three editions, was replaced by the word 'continuous'.

²⁰ In the fourth edition (1944), the phrase 'which has yet been put forward' was added after the word 'system'. Reference was also made to the technical position alongside the other three positions.

It is clear from this quote that Rose saw accounting methods and budgetary control as being too narrow in their remit, focusing on financial measures alone for control purposes. Those charged with controlling a business, in Rose's view, required more than simply financial statistics. Rose (1934, 32) noted that, "In control work it is the practice to assess the figures obtained as primary, secondary, and subsidiary, according to their importance as a source of information to the managing director as to how the business is going on as a whole". Primary figures showed only totals, whereas secondary figures showed the make-up of the primary figures, and subsidiary figures presented the minor subdivisions which went to make up the departmental totals (Rose 1934, 32). This categorization of data helped avoid too much time being spent by the managing director on unnecessary data.

In the first edition of *Higher Control*, Rose accepted that the idea of budgetary control was "fundamentally sound", but noted that it "suffers from the drawback that obviously it is not always possible to reach the budgeted turnover, however carefully the budget estimate may be made" (1934, 74). More significantly for Rose, was the view that (1934, 75):

budgetary control does not provide that balanced picture of affairs which the managing director has the right to demand. It will tell him whether his expenditure has been above or below his budget, whether his sales turnover is greater or less than he expected; but it fails in that it does not show him whether his concern is doing better or worse compared with the results of the last financial year.

Twenty years later, in the US-version of his work, Rose and his American co-author, D.E. Farr, emphasised that, in contrast to budgetary control, there was no need with *Higher Control* to engage in detailed investigations of every variation in outcomes:

Much has been written on the making of budgets, but from a practical standpoint the only background is a combination of past records adjusted for present conditions surveyed in the light of future requirements. The layout of the *Higher Control* profit and loss statement is a great help in this, in its distinction between primary, secondary, and subsidiary figures. If therefore a departmental manager keeps inside his primary target figure of expense, he should not be criticized if one or two of his secondary figures are above budget. This gives him freedom of action and entirely avoids the time-wasting and irritating questioning into minor excesses long after they have occurred. In the rush and pressure of working activity, emergencies are continually arising, and excess of expenditure over budget figures is occasionally quite unavoidable. The responsible head of the department must be allowed to use his discretion on individual items, and only have to give explanations when his primary figure of expense for the period had been exceeded.

(Rose and Farr 1957, 41)

Despite the relative success, in terms of its adoption, of budgetary control by firms in many countries by the mid-to-late 1950s, Rose continued to argue that Higher Control was superior to budgetary control:

[The] Management literature is full of references to budgetary control, standard cost control, quality control, production control, and the like. All these systems are valuable and have a part to play in raising the efficiency of management. But Higher Control is the only completely coordinated method of top-management control in which every aspect of a company's activities is watched over month by month. And the chief executive can rely on Higher Control to highlight any unfavourable movement of his affairs.

(Rose and Farr 1957, 11)

Whereas the British reviewers did not mention the issue, the two American reviewers paid special attention to Rose's remarks on the differences between his technique and that of budgeting or budgetary control. Fiske remarked that the five steps laid out by Rose for installing Higher Control showed a "striking similarity to the steps involved in the installation of a budget" (1936, 451). Fiske, however, pointed out that Rose focused purely on the use of MATs for the purpose of control, making no reference to planning, something which was a common feature of budgeting in the USA. Anderson likewise picked up on Rose's negative view of "the effectiveness of budgeting because it does not directly show whether a firm is doing better or worse than the last financial year" (1935, 111), going on to suggest that "The reader will form his own opinion as to the importance of this feature, in view of the fact that the flexible budget idea does show accomplishment as compared with that planned. Perhaps this is more important" (1935, 111).

The American criticisms of Rose's dismissal of the use of budgets for control purposes, and Fiske's comment that the book had to be read from a British perspective, clearly suggests that both he and Anderson viewed British methods of managerial control somewhat negatively. The American reviewers clearly considered Higher Control to be a lesser animal, something which moved in the direction of budgetary control but fell somewhat short of the mark. A key element here was clearly the advocacy by Rose of the use of actual data from the past for control purposes rather than the programmed figures favoured in budgetary control. Despite such criticisms, Rose continued to advocate the use of his method rather than budgetary control, even going so far as to claim in the final edition of his work that, "as a framework for presenting the movement of affairs in a company the Budgetary Control method can now be said to be definitely obsolete" (1968, 43). Judging by the fact that seven editions of the work were published between 1934 and 1963, not to mention numerous reprints of specific editions, there would appear to have been a sizeable audience willing to listen to his ideas in Britain, even after his death.²¹ It therefore seems somewhat paradoxical that, despite the sales success of his book, the term 'Higher Control' does not appear to have become part of the general managerial

²¹ The fourth edition, which first appeared in 1944, was reprinted at least three times – in 1945, 1946 and 1947 – while the seventh and last edition, which first appeared in the year of Rose's death, 1963, was subsequently published in paperback for the first time in 1967, and also reprinted in paperback the following year.

terminology in Britain in the immediate post-Second World War period in the way that, for example, the term budgetary control did.²²

The widespread dominance of American ideas in management in the decades immediately after the Second World War may help to explain this, and also why there only ever appeared a single edition of the American version of the text. While the publication in the USA of Rose and Farr (1957) suggests that there were some across the Atlantic who considered the technique might have some appeal, the apparent lack of any reprints or the appearance of a second edition of the book would suggest that the audience there was limited.

5.2 Higher Control and the *tableau de bord*

According to Lebas (1996, 89):

The term *Tableau de Bord* literally means ‘dashboard’ of a car or ‘instrument panel’ of a machine or a vehicle. It represents the set of selected indicators that allow the manager or the engineer (or the pilot or the ‘driver’ of the machine or business) to successfully ‘operate’ the physical and human assets that are his or her responsibility, in order to fulfill (sic.) the mission of the responsibility centre on an ongoing basis.

From the description of the concept shown above in section 4.1.2, it would appear that Higher Control was also seen in a similar vein, though the use of equivalent terminology is not evident until the mid-1950s. Thus, in the introductory chapter of the American edition of his work, the task of the person in charge of steering a business is likened by Rose to that of the “nautical navigator” (Rose and Farr 1957, 3), while H.B. Maynard, in his foreword to the work, preferred an aeronautical analogy, talking of the businessman “flying blind” without “a well-organized set of control information” (Rose and Farr 1957, vi). However, it was recognised that (Rose and Farr 1957, 3):

The business navigator has a problem that is considerably more difficult than that faced by the nautical navigator. He has a more complex mechanism to operate. The variables which affect it are more numerous and less predictable. The seas on which he sails are less exactly charted. Without adequate controls, therefore, he is quite likely to be at the mercy of forces which he can neither resist nor direct because he does not understand them.

²² In terms of published works in which the phrase appears, the British Library integrated catalogue reveals only one use other than that by Rose: a 32-page publication, in 1942, of *The development of the higher control of the machinery of government* by M.P.A. Hankey (Baron Hankey) – a paper initially given as his Haldane Memorial Lecture. A search of the Library of Congress catalogue for the term reveals only publications by Rose, either individually or his joint book with Farr. A similar search for the term ‘higher management’ in the Library of Congress catalogue reveals just two items: a series of monographs published by the Manchester Municipal College of Technology Department of Industrial Administration from 1946 onwards – No. 3 in this series was Rose’s *The Mensuration of Management* (1946); and an entry for the British Institute of Management which appears to have held regular series of ‘Higher management lectures’, the 24th series of which was published in 1965.

In the seventh British edition of *Higher Control*, in attempting to stress the benefits of the method to small firms, Rose (1968, 209) noted that

The little ship can be dangerously battered by storms through which the big liner will ride without much more than an uneasy motion. Hence a method of this nature, which sets out the position simply and clearly, and costs practically nothing in the doing of it, offers a practical assistance to the smaller businesses which is, indeed, invaluable.

Like the *tableau de bord*, Higher Control emphasised the visual presentation of data on a limited range of key variables or primary figures. According to Lebas (1996, 89) the variables reported should reflect the key parts of the organizational system of the business, including external elements such as competition, the evolution of demand and tastes, technological innovations, etc. While Rose continuously stressed the importance of primary figures and the need for these to be presented in chart form using the MAT method, the focus of Higher Control was squarely on the internal elements of the business rather than external ones since, according to Rose, “Over the outside problems he [the director] can exercise but little control, but what is going on inside the organization of his concern should be ascertainable” (1934, 4).

An essential feature of the *tableau de bord* approach, as described by Lebas (1996, 91-92), is that it “does not give a major place to accounting-based information (which tends to be mostly responsibility accounting-based). Physical information is considered to be anticipatory and a better base for decision making”. However, Lebas goes on to note that “synthetic accounting data” will often be included within the *tableau de bord* since all decisions have economic consequences. Building on this use of non-accounting data, Lebas (1996, 93) notes that

The *Tableau de Bord* is different from the information documents that arise from a responsibility accounting system. Its purpose is not to account for what has been done, but to provide information about the status, future, present, and recent past of each of the key success factors for each responsibility centre and for the firm as a whole.

Although the emphasis within the early version of Higher Control was on the use of financial data, Rose was equally aware of the importance of non-financial data. Indeed, he recognised that control statistics needed to be of two kinds, physical and monetary (Rose 1934, 27). Physical data, it was considered, should relate to production, stock and sales, while monetary data should relate to the costs of production, sales and administration respectively, together with sales turnover and profit or loss (Rose 1934, 27-28). It was further indicated that (Rose 1934, 28):

the physical statements should work up to a culminating figure; that figure should be expressed in terms of money, and that financial figure should form the link between the physical changes and the financial changes.

Whilst the earliest editions of *Higher Control* emphasised that the business position would be measured purely in financial terms, under operating controls we nevertheless find the use of non-monetary statistics, especially in relation to the ‘human and technical sides’ of operations. Like all aspects of the method, the range of non-financial data which was advocated increased over time. In later years, on the personnel side this included data on the number of employees, daily absenteeism, hours worked, performance levels, accident rates and labour turnover, whilst on the technical side (Rose and Farr 1957, 70-75) we find things like the ratio of incentive labour to that on day-rate, utilization of specific machines or groups of machines, total machine-hours lost, plus, on the materials side, data on stocks of finished goods, raw materials, and work in process. Despite this, it could nevertheless be argued that the balance within Higher Control was more in favour of accounting information than is the case in the tableau de bord approach though, as Pezet has shown, the nature of tableaux de bord, and especially the balance between financial and non-financial data, varied as between companies and changed over time, just as did the conceptualisation of Higher Control.

Although Rose never refers in his work to the tableau de bord approach, and may not even have been aware of it, he was aware of certain developments in France, most particularly the ideas of Henri Fayol. In the preface to the first edition in 1934 Rose admitted that while he and Pollen had been working on the method of Higher Control in the late 1920s, they had been unaware of Fayol’s ideas, but this had changed with the publication in 1929 of an English translation of *Administration Industrielle et Générale* (Rose 1934, xi). Rose suggested that the method of Higher Control “may be accepted as an attempt to solve the problem that M. Fayol had evidently visualized years ago” (1934, xii). In the final edition of his work, Rose elaborated on the dual meaning of the word *contrôle* in French, noting that it went beyond the conventional English use of the term as “the power of directing” to also mean “to examine, to inspect, or to check against some predetermined standard or limit” (1968, 27). For Rose, these two aspects of control, as enshrined within the French word *contrôle*, encapsulated the two key elements, as he saw them, of Higher Control: first, the setting up of a plan and the creation of an information system by which its attainment can be monitored; and second, the taking of action, by the managing director, on the basis of the information obtained so as “to maintain the progress of the business towards the desired result for the working year” (1968, 27). In this sense, Rose therefore saw Higher Control as embracing elements of strategy in the same manner that the tableau de bord is supposed to do.

Conclusions

It has been seen above that while there are important differences between the concepts of the tableau de bord, budgetary control and Higher Control, there are also many similarities and/or overlaps. These similarities arise, in large measure, because the concepts and tools associated with the three concepts were developed in the late nineteenth and early twentieth centuries as part of a similar process in France, the USA and Britain, namely, the systematisation of management. Within this movement, there were two important emphases: first, the use of statistical information, both financial and non-financial (the balance between these often shifting over time and not simply in a

single direction); and second, the use of graphs to present such data. Businesses in Britain, France and the USA therefore began to utilise methods which embraced these developments, though there is evidence which suggests that they may have done so in different ways and, possibly, to different degrees. Whilst it might be tempting to associate a single technique with a specific country, e.g. budgetary control with the USA, tableau de bord with France and, possibly, Higher Control with Britain, on the basis of the evidence presented above such a categorisation would clearly be too simplistic. Given that the precise extent of the use of each of these techniques at particular points in time is not known with any degree of accuracy, all that can be concluded is that there is some evidence of local methods of managerial control being developed in each country, and existing alongside those developed in other countries. Each of these methods represented a local variation on the implementation of a set of common ideas which stemmed from a more widespread phenomenon, namely, the rise of systematic management.

References

Primary sources

British Library of Political and Economic Science, University of London (BLPES) -
 Harry Ward Papers
 Coventry Record Office (CRO) – Daimler Papers (PA591)
 Manchester Central Library (MCL) – Hans Renold Ltd. papers (M501)

Secondary sources

- Accountant, The* (1934) Review of T.G. Rose 'Higher Control', 6 October: 472.
 Anderson, A.G. (1935) Review of T.G. Rose 'Higher Control', *The Accounting Review*, 10(1), March: 111.
 Berland, N. (1999) L'histoire du contrôle budgétaire en France. Les fonctions du contrôle budgétaire, influences de l'idéologie, de l'environnement et du management stratégique. Unpublished PhD thesis, University of Paris Dauphine.
 Berland, N. and Boyns, T. (2002) The development of budgetary control in Britain and France from the 1920s to the 1960s: a comparison, *European Accounting Review*, 11(2): 329-356.
 Berland, N., Boyns, T. and Zimnovitch, H. (2002) The influence of the accounting profession in the dissemination of costing in Great Britain and France: 1880-1950, *Comptabilité-Contrôle-Audit*, numéro special, May: 189-208.
 Boyns, T. (1993) Cost accounting in the south Wales coal industry c.1870-1913, *Accounting, Business & Financial History*, 3(3): 327-352.
 Boyns, T. (1998) Budgets and budgetary control in British business to c.1945, *Accounting, Business and Financial History* 8(3): 261-301.
 Boyns, T. and Wale, J. (1996) The development of management information systems in the British coal industry, c.1880-1947, *Business History*, 38(2): 55-80.

- Boyns, T. and Edwards, J.R. (1997) The construction of cost accounting systems in Britain to 1900: the case of the coal, iron and steel industries, *Business History*, 39(3): 1-29.
- Brech, E.F.L. (1997) *The Management History – The Concept and Gestation of Britain's Central Institute of Management, 1902-1976* (Corby: The Institute of Management Foundation).
- Chandar, N. and Miranti, P.J. (2009) Integrating accounting and statistics: forecasting, budgeting and production planning at the American Telephone and Telegraph Company during the 1920s, *Accounting and Business Research*, 39(4): 373-395.
- Chandler, A.D. jr. (1977) *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Harvard University Press).
- Davenport-Hines, R.P.T. (1985) Arthur Joseph Hungerford Pollen, in *Dictionary of Business Biography* Vol. 5, 753-757 (London: Butterworth).
- Elbourne, E.T. (1916) *Factory Administration and Accounts* (London: Longmans Green & Co.)
- Elbourne, E.T. (1947) *Fundamentals of Industrial Administration: An Introduction to Management* 4th ed. (edited by H. McFarland Davis) (London: Macdonald & Evans).
- Fiske, W.P. (1936) Review of T.G. Rose 'Higher Control', *Journal of American Statistical Association*, 31(194), June: 450-452.
- Gardey, D. (1997) Pour une histoire technique du métier de comptable: évolution des conditions pratiques du travail de comptabilité du début du XIX^e siècle à la veille de la Second guerre mondiale, in *Hommes, savoirs et pratiques de la Comptabilité*, 3-36 (Nantes: LAGON).
- Lebas, M. (1996) Management Accounting in France, in A. Bhimani (ed.) *Management Accounting - European Perspectives*, 74-99 (Oxford: Oxford University Press).
- Perry-Keene, L. (1922-23) Cost control in the motor-car and allied industries, *Cost Accountant*, 2: 104-07, 132-38, 170-74, 220-24, 252-56 and 284-85.
- Pezet, A. (2009) The history of the French *tableau de bord* (1885-1975): evidence from the archives?, *Accounting, Business & Financial History*, 19(2), July: 103-125.
- Rose, T.G. (1930) *Business Charts* (London: Sir Isaac Pitman & Sons).
- Rose, T.G. (1934) *Higher Control. A Manual for Company Directors, Secretaries and Accountants* (London: Sir Isaac Pitman & Sons).
- Rose, T.G. (1944) *The Management Audit*, 2nd ed. (London: Gee & Co.).
- Rose, T.G. (1947) *Higher Control in Management*, reprint of 4th ed. (London: Sir Isaac Pitman & Sons).
- Rose, T.G. (1968) *Higher Control in Management*, 7th edition (reprint of first paperback edition) (London: Sir Isaac Pitman & Sons).
- Rose, T.G. (1954) *A History of the Institute of Industrial Administration* (London: Institute of Industrial Administration).
- Rose, T.G. and Farr, D.E. (1957) *Higher Management Control* (New York: McGraw-Hill).
- Sargent Florence, P. (1935) Review of T.G. Rose 'Higher Control', *Economic Journal*, 45 (178), June: 343-344.
- Satet, R. (1936) *Le contrôle budgétaire, prévisions commerciales, industrielles et comptables, pour la direction rationnelle des affaires* (Paris: Dunod).

- Times, The* (1963) Obituary of T.G. Rose, 7 May 1963: 14.
- Wootton, C.W. and Kemmerer, B.E. (2007) The emergence of mechanical accounting in the U.S., 1880-1930, *Accounting Historians Journal*, 34(1): 91-124.
- Yates, J. (1989) *Control Through Communication. The Rise of System in American Management* (Baltimore: The Johns Hopkins University Press).
- Yates, J. (1994) Evolving information use in firms, 1850-1920 – Ideology and information techniques and technologies, in L. Bud-Frierman (ed.) *Information Acumen – The Understanding and Use of Knowledge in Modern Business* (London: Routledge), 26-50.

Appendix – A brief biography of Thomas Gerald Rose (1886-1963)

Rose was born in 1886 and educated at Marlborough School in Britain and the Realgymnazium of Darmstadt, in Germany, where he was trained as an engineer (*The Times* 1963, p.14), subsequently becoming a member of both the Institute of Mechanical Engineers and the Institute of Production Engineers. Between 1911 and 1919, according to his obituarist, Rose was a shop manager at the engineering firm Armstrong-Whitworth, moving in the latter year to become works manager of Leyland Motors Ltd. where he remained until 1925. Having obtained 15 years of experience, the exact period of time he was later to claim was vital for someone wishing to become an industrial consultant, Rose moved into free-lance consultancy work, practicing his new business from a base in London.

During the 1920s, Rose also began to take an active role in the education of future managers. In 1925-26, Rose undertook the presentation of a lecture course (a series of 25 lectures - Rose 1954, 57) for the second year syllabus of the Institute of Industrial Administration (IIA) on 'Workshop organisation and Management' at the Regent Street Polytechnic in London. In January 1930 Rose commenced a course on manufacturing management in an engineering context on the Third Year Tripos at the Engineering Department of Cambridge University (Rose 1954, 64; Brech 1997, 46). In these courses, Rose presumably expounded on the ideas which he had been developing during his periods of working for Armstrong-Whitworth and Leyland Motors, and which had prompted him to go into consultancy work. According to Brech (1997, 546 NR40), Rose "had pioneered systematic methods of applying a company's internal data for structured control of operational and financial performance". These ideas, which involved the use of charts for presentational purposes, received one of their first public airings at a meeting of the Junior Institution of Engineers in 1927 (the paper subsequently being published in *Cassier's Magazine* late in 1929). This formed the basis of his work, *Business Charts*, published in 1930.²³

Perhaps not surprisingly, Rose continued to develop his ideas and, four months after having been admitted as a fellow of the IIA²⁴, on 19 May 1931, he presented an address to the IIA membership entitled 'Higher Control' (Rose 1954, 66). Two days later, Rose was co-opted on the Council of the IIA, becoming a member of the Institute's Syllabus Committee on 26 November 1931, and was elected vice-chairman of the IIA at the Council Meeting held on 14 March 1932 (Rose 1954, 67-9). The following day Rose presented another paper to the IIA membership, this time entitled 'The Management Audit' (Rose 1954, 71). This latter paper was published later the same year by Gee and Co. as a 47-page monograph with a foreword by A.S. Comyns-Carr, the President of the IIA who had chaired the session at which Rose had presented the paper. The work was eventually published in three editions, appearing in 1932, 1944 and 1961 (the third edition also being reprinted in 1965), and its key message was the need for firms to undertake an annual audit of management, mirroring what happened with the annual

²³ *Business Charts* appeared in four further editions between 1935 and 1957: 2nd – 1935; 3rd – 1936; 4th – 1949; 5th – 1957.

²⁴ Two fellows, constituting the 38th and 39th fellows, one of them being Rose, were elected on 27 January 1931 (Rose 1954, 190).

audit of the financial accounts. Comyns-Carr noted that (Rose 1944, viii – reprint of foreword to 1st edition)

in setting out to demonstrate the practicality of this idea and to indicate methods by which it could be carried out he has given in concise and intelligible form a brilliant epitome of the fundamental principles of industrial management in their application to every branch of an industrial undertaking....

Although the work was mainly aimed at larger industrial undertakings, Rose also indicated how the principles could be applied to small and medium-sized enterprises.

Although there are clear indications of some of Rose's more specific ideas for managerial control contained within *The Management Audit*, its short length clearly did not give him the scope to explain the fullness of those ideas. These, however, were given fuller rein two years later with the publication, in 1934, of *Higher Control. A Manual for Company Directors, Secretaries and Accountants*. The significance of the work is reflected in the fact that, over the next thirty years or so, it appeared in seven editions, not to mention numerous reprints.²⁵ It should be pointed out that, in addition to *Business Charts* and *Higher Control*, Rose published a series of other works reflecting his views on management in the 1940s and 1950s: *The Mensuration of Management* (1946); *The Internal Finance of Industrial Undertakings* (1947); and *Top-Management Accounting* (a 70-page work published in 1957). In addition, in 1954, *A History of the Institute of Industrial Administration, 1919-1951*, authored by Rose was published by the IIA, of which Rose had been vice-chairman from 1932-37 and chairman 1938-43.²⁶

Rose died on 24 April 1963.

²⁵ The various editions of the book, published by Sir Isaac Pitman & Sons Ltd., appeared as follows: 2nd edition -1935; 3rd – 1938; 4th - 1944; 5th – 1950; 6th – 1957; 7th – 1963; 1967 (first paperback edition) With the fourth edition, first published in 1944, the title was changed to *Higher Control in Management; A Method of Presenting the Facts and Figures of Industrial and Commercial Undertakings so that they can be used for the Purpose of Management*. A paperback version of the 7th edition appeared in 1967, after Rose's death, and was reprinted in 1968. The text was also published in France in 1959, under the title *La gestion de l'entreprise a la plus élevée* (translated by Charles Voraz and published in Paris by Editions de l'Entreprise moderne). An American text, entitled simply *Higher Management Control*, co-authored with Donald E. Farr, was published in the USA by McGraw-Hill in 1957.

²⁶ The IIA was founded in 1919 by E.T. Elbourne and lost its separate identity in 1951 when it merged with the recently created British Institute of Management (BIM), becoming the BIM's General Management Professional Institute (Rose 1954, 177).